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ABSTRACT

This brochure is the third edition of a publication designed to give brief information about educational opportunities in the United States for graduate studies in water resources. The 65 universities listed from 42 states are all members of the Universities Council on Water Resources. For each university, a brief description of the program is provided, giving subject emphasis, degrees offered, related facilities, financial assistance and positions where available, and the person and place to contact for additional information. (BL)

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Graduate Studies in

WATER RESOURCES

UNIVERSITIES COUNCIL ON WATER RESOURCES · 1970

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PREFACE

This brochure is the third edition of a publication whose aim is to give brief information about educational opportunities in the United States for graduate studies in water resources. The universities listed here are all members of the Universities Council on Water Resources.

Students with undergraduate preparation in any of the natural sciences or engineering will find stimulating and rewarding careers in hydrology, water resources engineering, and sanitary engineering. Those whose undergraduate preparation is in the social sciences will find equally rewarding opportunities in economics, political science, law, regional planning and similar fields with major emphasis on water resources and its development.

At all the universities listed, course offerings and available financial assistance change from time to time. Detailed information can be obtained from the persons listed at the end of each entry and students who are considering graduate studies should write for additional information.

The Universities Council on Water Resources (UCOWR) is an organization of universities established to encourage education and research in water resources. Membership is restricted to United States universities although the Council has several foreign affiliates. This publication has been produced by the UCOWR Publications Committee (Chairman, Dr. J. Ernest Flack of the University of Colorado).

Information about the Council and additional copies of this brochure can be obtained by writing the Executive Secretary whose address is:

Dr. William S. Butcher
Department of Civil Engineering
Taylor Hall 212A
The University of Texas at Austin
Austin, Texas 78712

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ALABAMA

AUBURN UNIVERSITY

Auburn, Alabama 36830

Undergraduate and graduate programs are available in a number of specialized areas of the water sciences at Auburn University. The principal areas of activity at the doctoral level are: water and soil relationships (Agronomy & Soils or Agricultural Engineering), aquatic weed control (Botany & Plant Pathology) and fisheries biology and management (Zoology-Entomology). Principal program areas at the M. S. degree level are: economics of land and water resources (Agricultural Economics & Rural Sociology) and hydrology, hydraulics or sanitary engineering (Civil Engineering). Multidisciplinary and interdepartmental programs are available with these and other departments.

For further information, contact the appropriate department or Dr. W. V. Parker, Dean of the Graduate School.

UNIVERSITY OF ALABAMA

University, Alabama 35486

The College of Engineering offers a program leading to the Master of Science in Engineering Hydrology degree. The program is administered by the Interdisciplinary Programs Committee. It draws largely on courses offered by the departments of Civil Engineering, Mineral Engineering, and Geology with collaboration of the Geological Survey of Alabama and the United States Geological Survey. Reporting directly to the Dean, the committee is charged with development of the curriculum and special courses, evaluation of applicants to the program, and other academic procedures.

The program is open to graduates of recognized institutions in engineering and non-engineering disciplines who have completed at least one year's work in chemistry, at least one year's work in physics, mathematics through differential equations, and an engineering mechanics sequence through fluid mechanics. Basic physical geology is also a prerequisite. Provision can be made, however, for the applicant to remove areas of deficiency by auditing or otherwise completing appropriate make-up courses for no credit. Make-up work normally will be completed during the first semester in order that program requirements may be met within one year.

For further information, contact, Chairman, Engineering Hydrology Committee, P. O. Box 1968.

ALASKA

UNIVERSITY OF ALASKA

College, Alaska 99701

Graduate studies in water resources have their current emphasis in the fields of water quality aspects of sanitary engineering, hydrology, marine sciences and ocean engineering. Degrees offered include the Master of Science in Environmental Health Engineering, Master of Science in Ocean Engineering, and the interdisciplinary Ph.D. degree in Oceanography. Other institutes located on this campus besides the Institute of Water Resources and the Institute of Marine Sciences which deal heavily in water and water related subjects are the Geophysical Institute, the Institute of Arctic Biology, and the Institute of Social, Economic and Government Research. The University is able to offer a broad interdisciplinary program leading to the Master of Science or Ph.D. in interdisciplinary fields. One of the major advantages of the location of the University of Alaska is its close proximity to large relatively uninhabited natural areas ideally suited to studies in the water field. Being the farthest north university on the North American continent a great deal of research is concerned with the development of the artic. Research assistantships and graduate assistantships are available in nearly every department mentioned above.

For further information contact Dr. R. Sage Murphy, Director, Institute of Water Resources or Dr. Donald Hood, Director, Institute of Marine Sciences.

ARIZONA

UNIVERSITY OF ARIZONA

Tucson, Arizona 85721

The Master of Science and Doctor of Philosophy degrees are offered with a major in hydrology and in water resources administration. The hydrology major is for those students with special interests in the hydrologic aspects of water resources development with emphasis on the physical, chemical and biological factors, while the water resources administration major is for students with special interests in the behavioral sciences as they relate to water resources development and management. These programs are multidisciplinary in organization offering to the student the resources of the university and flexibility in developing a course of study. Programs emphasizing water resources are also offered in agricultural chemistry and soils, agricultural engineering, agricultural economics, civil engineering, geology, meterology, and watershed management.

For further information, contact Dr. Daniel D. Evans, Chairman, Hydrology and Water Resources Office.

CALIFORNIA

CALIFORNIA INSTITUTE OF TECHNOLOGY

Pasadena, California 91109

Graduate study and research in water resources at Caltech emphasize the comprehensive approach to water as a major element of man's environment. New programs for M.S. and Ph.D. degrees have been established in Environmental Engineering Science to complement those in Civil Engineering. Courses and research opportunities are in the following subject areas: hydrologic transport processes (mixing and dispersion, stratified flow), hydraulic engineering, aqueous solution chemistry, geochemistry, water supply and treatment, wastewater treatment and reclamation, marine ecology, environmental biology, disperse systems, sediment transport, geomorphology, coastal engineering, and economics of systems for environmental control.

For further information, contact Prof. Norman H. Brooks or Prof. Jack E. McKee, Keck Engineering Laboratories.

STANFORD UNIVERSITY

Stanford, California 94305

Graduate study leading to the M. S. and Ph.D. degrees in several areas of water resources is offered. Civil engineers may pursue engineering hydrology, water quality control or engineering-economic planning. Geologists may pursue hydrogeology. Students other than those in geology or civil engineering may study hydrology. In each case, considerable latitude is given in the selection of courses. Students in related engineering fields can obtain a Masters Degree in Civil Engineering with a program oriented toward sanitary engineering and water quality control. This program is interdisciplinary, so that the mechanical, chemical, and even electrical engineers, can become qualified. Programs in engineering-economic planning are interdepartmental involving economics, political science, industrial engineering, and law. Systems analysis and optimization work is available through the Department of Engineering-Economic Systems.

For further information, contact Professor Ray K. Linsley, Department of Civil Engineering, or Professor Irwin Remson, Department of Geology.

UNIVERSITY OF CALIFORNIA

Berkeley, California 94720

Graduate studies in water resources and closely related fields are available at the University of California, Berkeley, in the Division of Hydraulic and Sanitary Engineering (including hydraulics, hydrology and water quality management), in Agricultural Economics (natural resources economics), in Political Science, Geography, Geologic Engineering, and Economics. Interdisciplinary programs can be arranged, depending upon background and interests. The Ph.D. can be earned in all of the above departments along with master level degrees. In addition, the degrees of Doctor of Engineering and Master of Engineering may be awarded by the Department of Civil Engineering. The School of Law offers degree programs and research with specialization in water law.

For further information, contact Professor S. V. Wantrup (Agricultural Economics), Professor D. K. Todd (Hydraulic Engineering), Professor E. A. Pearson (Sanitary Engineering), or Professor P. J. Zinke (Forestry).

UNIVERSITY OF CALIFORNIA

Davis, California 95616

The Davis campus offers a variety of programs and courses in the field of water resources. Graduate instruction and research are available in Civil Engineering (M.S., M.E., Ph.D., and D.E.), including hydrologic engineering, hydraulics, fluid mechanics, irrigation and drainage engineering, and water resources; in Irrigation Science (M.S.), water quality and salinity, hydrology, irrigation management, crop water requirements, water application methods and hydrobiology; in Entomology (Ph.D.), aquatic biology; in Zoology (M.S. and Ph.D.), limnology; in Soil Science (M.S. and Ph.D.), physics of soil water, water movement, and water chemistry; in Plant Physiology (Ph.D.), water relations of plants; and in Ecology (Ph.D.), hydrobiology and limnology. These programs are available in the Departments of Civil Engineering, Water Science and Engineering; Entomology, Zoology and the Soil Science, Plant Physiology and Ecology Graduate groups, respectively, and are supported by water resources courses in political science, geography, agricultural economics, limnology, and geology.

For further information, contact Professor V. H. Scott, Department of Water Science and Engineering, or Professor L. F. Weschler, Department of Political Science.

UNIVERSITY OF CALIFORNIA

Los Angeles, California 90024

Degree programs at the master and doctorate level are available in the departments of economics, systems engineering, geology, geography, history, law, political science and public health. Interdisciplinary work can be arranged although generally one department will be in charge. The engineering program emphasizes the optimization of water resources development, hydraulics, hydrology and water quality management. Political science has emphasized the political and organizational problems. A cooperative program in geology and engineering has also been established. Arrangements can usually be made for the cooperation with departments of other campuses of the University.

For further information contact Professor Arthur F. Pillsbury, Director, Water Resources Center.

UNIVERSITY OF CALIFORNIA

Riverside, California 92502

Graduate study in Water Resources is offered in the academic departments of the College of Biological and Agricultural Sciences. Emphasis is placed on environmental systems, agricultural water quality, plant-soil-water relationships, and the optimization of the utilization of land, water, and biological resources. At present, Water Resources Systems Engineering is arranged through either the University of California at Irvine or the University of California at Los Angeles.

For further information, contact Professor W. A. Hall, Director, Dry-Lands Research Institute.

UNIVERSITY OF SOUTHERN CALIFORNIA

Los Angeles, California 90007

Advanced work in the field of water resources can be arranged through course work and research tailored to a student's individual goal. Course work is available in the following departments, schools and divisions: Biological Science, Chemical Engineering, Civil Engineering, Economics, Geography, Geological Sciences, Law, Planning, Political Science, Public Administration, and Sociology.

For further information contact Professor Stanley Butler, Department of Civil Engineering, or Professor Carl Christol, Department of Political Science.

COLORADO

COLORADO STATE UNIVERSITY

Fort Collins, Colorado 80521

Colorado State University, traditionally, has had a high degree of competence in water resources. Graduate programs leading to M. S. and Ph.D. degrees are available within the disciplines of engineering economics, atmospheric science, bacteriology, geology, political science and public administration, agronomy and soils science, watershed management, forestry range science, and fishery and wildlife biology. Major research areas include: erosion and sedimentation, fluvial hydraulics, irrigation, groundwater mechanics, water quality and management, hydrology, hydrogeology, geomorphology, microbiology, hydraulic structures, hydrobiology, soil physics, plant-water relationships, watershed management, water resources economics, ecology, remote sensing of environment, snow hydrology, and water in the atmosphere. Facilities include outstanding hydrology, hydraulics and fluid dynamics labs, experimental watersheds, new microbiology labs, CDC 6400 computer, and a high elevation ecology-watershed management research lab.

For further information, contact Norman A. Evans, Director, Natural Resources Center.

UNIVERSITY OF COLORADO

Boulder, Colorado 80302

The University of Colorado offers graduate education in water resources leading to the degrees of Master of Science and Doctor of Philosophy in the departments of Civil Engineering, Economics, Chemical Engineering, Biology, Chemistry, Geography, Geology and in the Law School. Areas of study within these departments include water quality, hydrology, economics, geology, conservation, water chemistry, aquatic biology and ecology, water law, hydraulics, water resources and sanitary engineering, water resources systems and management and urban water resources. Broad-based interdisciplinary course programs can be arranged to include these areas as well as engineering design and economic evaluation, political science and atmospheric science. Research entities include the Institute of Arctic and Alpine Research, Civil and Chemical Engineering Laboratories, the Computer Center, Geology Laboratories, Bureau of Economic Research, Center for Urban Engineering Studies, Institute of Behavioral Science and the High Altitude Observatory.

For further information contact Professor J. Ernest Flack, Director, Water Resources Training Program.

CONNECTICUT

UNIVERSITY OF CONNECTICUT

Storrs, Connecticut 06268

Programs are offered leading to the M. S. and Ph.D. degrees in many phases of water resources use, development and management. Graduate students have full opportunity to select courses which lead to broad interdisciplinary training with programs being tailored to the individual student's needs. Courses are offered in the agricultural, biological, earth, engineering, social and physical sciences, and in law. The Institute of Water Resources sponsors and coordinates water research and encourages interdisciplinary education and training of advanced students. Active research is being conducted in many disciplines. These investigations offer a variety of assistantships and fellowships and provide the opportunity for the graduate student to be associated with senior University staff members in conducting exciting and constructive research.

For further information, contact Dr. W. C. Kennard, Director, Institute of Water Resources.

FLORIDA

UNIVERSITY OF FLORIDA

Gainesville, Florida 32601

Graduate study leading to master's and doctor's degrees is possible in many disciplines closely related to water resources. The student may do research on water resource problems in any of several departments or may engage in interdisciplinary programs. In Engineering the student may specialize in ground water hydrology, surface water hydrology, soil and water management engineering, irrigation and drainage, water supply and pollution control, water resources planning and systems analysis, environmental biology and water chemistry. The student may major in Agricultural Engineering, Civil Engineering, Environmental Engineering or Industrial and Systems Engineering. Strong graduate programs in water resources also exist in Soils, Agricultural Economics, Geography and Geology. The College of Law offers special programs in water law. Research assistantships are available in many departments.

For detailed information contact Dr. Harold P. Hanson, Dean of the Graduate School.

GEORGIA

UNIVERSITY OF GEORGIA

Athens, Georgia 30601

Graduate studies in water resources at the University of Georgia are coordinated in an Institute of Natural Resources representing the agricultural, arts and sciences, statistical and socio-economic schools and departments. Master of science and doctoral programs draw on a common core of courses from all disciplines but degrees are offered within the following research areas and departments: Watershed management and soil conservation (Agricultural Engineering, Agronomy, Forest Resources, Agricultural Economics); the role of plant and soil in the water cycle (Agronomy, Forest Resources, Botany); ground water (Geology); hydrometeorology (Geography); sources and effects of pollution (Bacterioloty, Geology, Microbiology); lakes, reservoirs and fresh water streams (Geography, Zoology, Geology, Forest Resources); estuarine problems (Geology, Zoology); ecological impact of water development (Zoology, Forest Resources, Botany); socio-economic aspects of water resources (Agricultural Economics, School of Law, Business School, Geography). Location in a humid piedmont province between the mountains and the coastal plain favors a variety of water resources studies. Notable facilities on or near campus are a full-service computer center (IBM 360/65), a Marine Institute (UGA), an Institute of Ecology (UGA), the Southeast Water Laboratory (USDI), a Soil and Water Conservation Field Station (USDA), the Southeast Watershed Research Center (ARS), the Coweeta Hydrologic Laboratory (Forest Service), the Savannah River Plant (AEC), and the Skidaway Institute of Oceanography (University of Georgia System).

For further information, contact Dr. E. L. Cheatum, Director, Institute of Natural Resources, or Dr. John D. Hewlett, Chairman, Water Resources Division, Institute of Natural Resources.

GEORGIA INSTITUTE OF TECHNOLOGY

Atlanta, Georgia 30332

Current emphasis in the field of Water Resources is on hydrology, fluid mechanics, and the water-quality aspects of sanitary engineering, with strong support in mathematics, biology, chemistry, geology, systems engineering, city planning, and engineering economy. Additional areas of support are being developed with the assistance of the campus-wide Water Resources Center. Graduate curricula leading to M. S. and Ph.D. degrees are offered in several related disciplines. Outstanding research facilities in fluid mechanics, sanitary chemistry and biology, radiochemistry,

bioengineering, etc., are supplemented by an exceptionally good library, computer center, information science center, and nuclear reactor and research center. Traineeships, scholarships, and assistantships are available for better students.

For additional information, contact Prof. C. E. Kindsvater, Director, Water Resources Center.

HAWAII

UNIVERSITY OF HAWAII

Honolulu, Hawaii 96822

Graduate studies in water resources at the University of Hawaii involve courses offered by many departments. Graduate degrees are awarded by the Departments of Agricultural Economics, Agronomy and Soil Science, Geography, Geosciences, and Oceanography (M.S. and Ph.D.), the Departments of Agricultural Engineering and Civil Engineering (M.S.), the Departments of Economics (M.A.) and the School of Public Health (M.S. and M.P.H.). The Water Resources Research Center arranges interdisciplinary water resources instructional programs with these and other cooperating departments and coordinates them with its own research program and related programs in other University research units. Graduate assistantships are available from the several concerned departments and research units and scholarships for students from or concerned with Asian and Pacific areas from the East-West Center.

For further information contact Dr. Wytz Gorter, Dean, Graduate Division or Dr. D. C. Cox, Director, Water Resources Research Center.

IDAHO

UNIVERSITY OF IDAHO

Moscow, Idaho 83843

M.S. degree and Ph.D. work is offered in water resources and hydrology, in Agricultural Engineering, Civil Engineering, Geology and Geography and Forestry and M.S. degree is offered in Agricultural Economics. Particular emphasis is on groundwater, snow hydrology, water resource planning, irrigation development, soil and water conservation, and water project economics. Special work toward a Ph.D. is available in Geology, Zoology and Agricultural Biochemistry where emphasis is on geology of ground water, aquatic biology and water quality. There has been established

a Scenic Rivers Study unit for special research and study in this area. Excellent cooperative facilities and agreements for research with on-going programs of state and federal agencies. Several research fellowships and assistantships are available.

For further information contact Professor C. C. Warnick, Director, Water Resources Research Institute.

ILLINOIS

SOUTHERN ILLINOIS UNIVERSITY

Carbondale, Illinois 62901

Southern Illinois University offers graduate opportunities in Water Resources leading to the degrees Master of Science and Doctor of Philosophy in the Departments of Botany, Chemistry, Economics, Geography, Government, and Zoology. Specializations within these departments include aquatic biology and ecology, water chemistry, climatology, fisheries management, water resources management, and others. Interdisciplinary programs are structured to the goals and the needs of individual students. Research facilities include laboratories of aquatic ecology, chemistry, climatology, and chemical engineering, fisheries, the Pine Hills Field Research Station, the Transportation Institute, and the Data Processing and Computing Center.

For further information contact Professor William Lewis, Chairman, Water Resources Committee, Graduate School.

UNIVERSITY OF CHICAGO

Chicago, Illinois 60637

Graduate programs, specializing in water resources research, and leading towards the degrees of Master of Arts, Master of Science, and Doctor of Philosophy are offered by the Departments of Geography, and Economics. Interdisciplinary research is undertaken with several other departments, including Sociology, Psychology, Law and Geophysics. Several cooperative research projects are also undertaken with federal, state and various local agencies.

Further information may be obtained from Professor George S. Tolley, Department of Economics, 1126 East 59th Street.

UNIVERSITY OF ILLINOIS

Urbana, Illinois 61801

The University of Illinois offers over 90 graduate courses (in 19 departments) that are basic to one or more aspects--engineering, scientific, social, economic, political or legal--of water resources. In Civil Engineering, master's and doctor's programs include selected courses in sanitary and hydraulic engineering, water quality, pollution control, scientific hydrology, water resources systems planning, hydromechanics, and hydraulic structures. Elective courses in other departments include, for instance, hydrogeology and geological oceanography in Geology; soil physics in Agronomy; and soil and water conservation in Agricultural Engineering. In addition, the University's Water Resources Center coordinates the campus-wide programs.

For further information contact Professor V. T. Chow, Department of Civil Engineering, or Professor J. E. Cribbet, College of Law, or Dr. B. B. Ewing, Water Resources Center.

INDIANA

INDIANA UNIVERSITY

Bloomington, Indiana 47401

In the natural sciences Indiana University currently has a graduate program in hydrogeology. It also offers advanced courses dealing with water resources through the Departments of Biological Sciences and Chemistry. In the social sciences, graduate work may be taken in water resource fields of economics, government, law, sociology, and geography. In addition, graduate study in the field of recreation is available. A field laboratory concerning the effect of water impoundment is available in the nearby Monroe Reservoir, which covers 30 square miles.

For further information, contact Director, Water Resources Research Center.

PURDUE UNIVERSITY

Lafayette, Indiana 47907

The educational programs and interdisciplinary researches concerned with water resources are coordinated by the Water Resources Research Center of the Natural Resources Research Institute. Graduate studies in water resources include physics and chemistry of soil water; runoff, erosion, irrigation and drainage; water management, and agricultural climatology in the School of Agriculture. The School of Civil Engineering features studies in surface and ground water hydrology, open channel and river hydraulics, flood routing and sediment transport; hydromechanics; ground water seepage and geology; water supply treatment; hydraulic structures design; systems design and system analysis of water resources developments. The Departments of Economics and Agricultural Economics offer courses in resource utilization and development, public finance and capital replacement theory. The Department of Political Science via its Science and Public Policy Program offers courses that focus on the interrelationships between science, technology, public policy and international order.

For further information, contact Professor D. Swartzendruber, Department of Agronomy or Professor J. W. Delleur, School of Civil Engineering.

IOWA

IOWA STATE UNIVERSITY

Ames, Iowa 50010

Major work in water resources is offered for the degrees Master of Science and Doctor of Philosophy under a cooperative arrangement with various departments including Agricultural Engineering, Agronomy, Bacteriology, Botany and Plant Pathology, Civil Engineering, Dairy and Food Industry, Earth Science, Economics, Family Environment, Forestry, and Zoology and Entomology. Minor work is offered to students taking major work in other areas. Facilities exist in several departments for fundamental research in such areas as source, distribution and movement of water (hydrology); hydraulics of water control facilities; physical, biological and chemical properties of water (water quality); and economics of water resource development.

A student majoring in water resources will choose a major professor from the graduate faculty membership of the cooperating departments and will develop his program of study under the guidance of a committee nominated by the administrative department head, approved by the Water Resources Advisory Committee, and appointed by the Dean of the Graduate College. For administrative purposes the student will be in the department of his major professor.

For further information contact Professor Don Kirkham, Director, Iowa State Water Resources Research Institute or Professor Howard P. Johnson, Department of Agricultural Engineering.

UNIVERSITY OF IOWA

Iowa City, Iowa 52240

A program leading to advanced degrees in Water Resources Development combines pertinent courses in engineering hydraulics, fluid mechanics, and sanitary engineering with courses in related areas such as environmental biology, limnology, geology, probability, and the social sciences. It includes an interdisciplinary seminar involving graduate students in all of the related disciplines, each contributing information from his particular field pertinent to the development of the resources of a region. Extensive laboratory facilities in hydraulics, water treatment and waste disposal as well as a large computer center are available to graduate students.

For further information contact Professor J. W. Howe, Department of Mechanics and Hydraulics, or Professor W. L. Paulson, Department of Civil Engineering.

KANSAS

UNIVERSITY OF KANSAS

Lawrence, Kansas 66044

The University of Kansas offers M. S. degrees in water resources engineering and water resources science, and a variety of M. S. and Ph.D. programs in such water related areas as geology, fluid mechanics, and environmental health. The water resources programs are inter-departmental. Though core requirements stress engineering, geology, and meteorology, a student has the option of specializing in water science, or obtaining a broad interdisciplinary base in water management. Depending on individual student qualifications and interest, interdisciplinary options can be developed from extensive graduate offerings in such areas as mathematics, economics, geography, and political science.

For detailed information, contact Graduate Water Resources Programs, Department of Civil Engineering, 208 Learned Hall.

KENTUCKY

University of Kentucky

Lexington, Kentucky 40506

The water resources program at the University of Kentucky is concentrated largely within the Department of Civil Engineering. The purpose of the program is to provide graduate educational opportunities for the students who desire to pursue one or more careers in water aspects or in water management. Curriculum in the Masters degree level can be chosen to emphasize water resources planning and management, water quality control, or hydraulics and fluid mechnics. Supporting courses are available in the biological and physical sciences, in mathematics and in the agricultural sciences. Programs leading to the Ph.D. of Philosphy are under the supervision of special committees composed of faculty drawn from the disciplines in which the student is interested.

For further information contact the Director of Graduate Studies, Department of Civil Engineering.

LOUISIANA

LOUISIANA POLYTECHNIC INSTITUTE

Ruston, Louisiana 71270

Graduate studies leading to the Masters and Doctor of Philosophy degrees in many areas of water resources are offered in several departments of the university. These areas include, but are not restricted to, water supply, water pollution control, hydrology, hydraulics, watershed planning and management, soil-plant-water management, marine biology and ecology, nature of water, and economic and legal considerations in water resources. Departments with course offerings and research activity include Agricultural Engineering, Bacteriology, Botany, Business Accounting, Business Economics, Business Management, Chemical Engineering, Chemistry, Civil Engineering, Geology, and Zoology. Graduate students have full opportunity to select courses which lead to a broad interdisciplinary training with each individual program tailored to meet the needs of the student.

The Louisiana Tech Water Resources Center coordinates water research and education programs and encourages interdisciplinary training and education of advanced students. Facilities for water resources programs available on or near the campus include a Computer Center, Nuclear Center, 150 acre Research Park, U. S. Regional Depository Library, and Lake D'Arbonne.

For further information contact either the individual Department Head or Dr. Bobby E. Price, Director of the Water Resources Center.

MAINE

UNIVERSITY OF MAINE

Orono, Maine 04473

Unique advantages in water resources education and research are available at the University of Maine which is located near abundant coldwater resources--lakes, rivers and estuaries. The Ph.D. can be earned in Oceanography (interdisciplinary), Plant Science, Sanitary Engineering, and Zoology. Doctoral programs in geological oceanography and in forestry may be implemented in 1970. Masters degree programs are available in the following water related fields: Agricultural and Resource Economics, Chemical Engineering, Civil Engineering, Geological Sciences, Resource Utilization, Wildlife Management, and Zoology. Graduate work in oceanography and marine zoology is conducted largely at the Ira C. Darling Center located on an estuary leading to the Gulf of Maine. Graduate work in eutrophication, wastes treatment, and forest hydrology is enhanced by ongoing research projects supported with Federal and State grants.

For further information contact Dr. F. P. Eggert, Dean of the Graduate School.

MARYLAND

JOHNS HOPKINS UNIVERSITY

Baltimore, Maryland 21218

A program in water resources is offered through the Department of Geography and Environmental Engineering, Oceanography, and Mechanics. Joint seminars in Water Resources Management and in the water sciences provide a focus for a comprehensive approach to the field. Students are encouraged to select courses in their fields of special interest in appropriate departments of the University. Thus each student's program is designed to provide him with a general view of the field while encouraging him to obtain a thorough grounding in a limited area. Fields of study include such areas as hydrology, resource economics, operations research, geomorphology, sediment transport, estuarine studies, atmospheric elements of the hydrologic cycle, and biological and chemical aspects of pollution.

For further information contact Professor John C. Geyer, Chairman, or Professor M. Gordon Wolman, Department of Geography and Environmental Engineering.

MASSACHUSETTS

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Cambridge, Massachusetts 02139

Graduate studies in water resources at M.I.T. are concentrated in the Department of Civil Engineering. Emphasis is upon the analysis, synthesis and optimization of hydrologic, water-quality control and multi-purpose, multi-unit water-resource systems. Primary concentration areas are hydraulic engineering, systems methodologies including computers and optimization techniques, economics and planning. Primary applications areas are urban water management, regional water planning, river basin development, esturial quality control.

For further information contact Professor A. T. Ippen, Department of Civil Engineering.

UNIVERSITY OF MASSACHUSETTS

Amherst, Massachusetts 01002

The University provides graduate education in Water Resources and closely related fields, and conducts extensive research in the broad areas of water resources. The major current thrust is a two-fold one: water resources engineering and water resources planning.

The program of water resources engineering encompasses instruction in the principles of hydrology, hydraulics, wastewater treatment, water treatment, water quality management, design of engineering structures, water law and institutions, and economics. The program offers degrees at the M.S. and Ph.D. levels and prepares students for carrers in research, design, planning, and management of municipal and regional water resources engineering systems.

The program in resources planning focuses on principles of regional water resources planning and provides instruction in resource economics, resource ecology, regional planning, landscape architecture, and water law and institutions. It offers the degree of M.S. and prepares students for careers in the planning of water and related land resource systems.

For further information, contact Professor Bernard B. Berger, Director, Water Resources Research Center.

MICHIGAN

MICHIGAN STATE UNIVERSITY

East Lansing, Michigan 48823

Graduate study in several areas of water resources development and management is available. Either departmental or interdisciplinary programs include selected courses in water resources systems, hydraulics, hydrology, water treatment principles, sewage collection and treatment, biological principles of sanitary engineering, radioactive pollution, geophysics, hydrogeology, glaciology, physical oceanography, land economics, resources development policy, water pollution, physical geography, forest hydrology, limnology, microclimatology, soil-plant-water relationships. Departments providing courses are: Agricultural Economics, Agricultural Engineering, Botany and Plant Pathology, Chemical Engineering, Civil and Sanitary Engineering, Entomology, Farm Crops, Fisheries and Wildlife, Forestry, Geography, Geology, Horticulture, Mechanical Engineering, Microbiology and Public Health, Physiology, Resource Development and Soil Science.

Additional information about masters and doctors programs or general information about the Institute may be obtained by contacting Dr. Robert C. Ball, Director, Institute of Water Research, 339 Natural Resources, or the appropriate department chairman.

UNIVERSITY OF MICHIGAN

Ann Arbor, Michigan 48104

Interdisciplinary graduate training programs in Water Resources are coordinated by the Water Resources Committee. These are Water Resource Science, Water Resources Engineering, Water Resources Management (policy, planning and administration), Water Resource Economics. In addition studies in hydrology, hydraulics and sanitary engineering are offered in the Department of Civil Engineering; studies in health aspects of water quality and stream analysis are provided by the Department of Environmental Health; studies in fisheries, aquatic biology, water and soils and regional resource planning are provided by the School of Natural Resources. A variety of topics in climatology are available from the Department of Meteorology and Oceanography, studies in ground water may be pursued in the Department of Geology and electives in limnology are offered by the Department of Zoology.

For further information address the Chairman, Water Resources Committee, Rackham School of Graduate Studies. For information relating to other areas of water resource studies, inquiries should be addressed to the relevant Dean or Department Chairman.

MINNESOTA

UNIVERSITY OF MINNESOTA

Minneapolis, Minnesota 55455

A program of graduate education in water resources was established in December 1965. Water Resource Engineering in the Department of Civil Engineering is part of a strong program of teaching and research in hydrology, sanitary, and hydraulic engineering, and hydromechanics. Active research programs are underway in the Sanitary Engineering Division and at the St. Anthony Falls Hydraulic Laboratory. The Department of Agricultural Engineering has active graduate teaching and research programs in hydrology as applied to drainage, irrigation, and erosion control. Graduate studies in hydro-geology are offered by the Department of Geology and Geophysics. In addition, courses bearing on water resources are offered in the following departments: Soil Science; Agricultural Economics; Botany; Entomology, Fisheries and Wildlife; Forestry, Geography; Physics and Public Health. A Water Resources Research Center has been established in the Graduate School to coordinate water resources research at the University.

For further information, contact Dean Bryce Crawford, Jr., Graduate School, 321 Johnstone Hall.

MISSISSIPPI

MISSISSIPPI STATE UNIVERSITY

State College, Mississippi 39762

Although the University does not offer a program leading to a graduate degree in Water Resources, as such, it does offer graduate programs for which major or minor disciplines may be within or related to the broad area of Water Resources. A significant number of graduate students have participated in the Water Resources Research Institute's program. The various branches of the University through which the Institute has carried out its research efforts are Agricultural and Biological Engineering, Agronomy, Bureau of Business and Economic Research, Civil Engineering, Forestry, Geology, Microbiology, Social Science Research Center and Wildlife Management.

The Director, Water Resources Research Institute, will be pleased to refer any pertinent inquiries to appropriate administrative officers.

MISSOURI

UNIVERSITY OF MISSOURI

Columbia, Missouri 65201
Rolla, Missouri 65401

The University of Missouri, Columbia, offers graduate degrees with emphasis on water in biological sciences, earth sciences, economics, engineering, social sciences and soils. Ph.D. programs may be on an area studies basis with members of the advisory committee adequately representing the disciplines and departments concerned. The University of Missouri at Rolla offers graduate work leading to the Ph.D. in the fields of hydrology, geohydrology, sanitary engineering, mining engineering and chemistry. The campus also has an active Water Resources Group devoted to research and training which is interdisciplinary in scope.

For further information contact the appropriate department head or Dr. John C. Murdock, Dean of the Graduate School, 205 Jessee Hall, Columbia 65201, or Dr. Wouter Bosch, Director of Graduate Studies, 113 Old Chemistry Bldg., Rolla 65401.

MONTANA

MONTANA STATE UNIVERSITY

Bozeman, Montana 59715

Graduate study in several areas of water resources planning, development and management is available. The Colleges of Agriculture, Engineering and Letters and Science each have a number of graduate programs at both the M.S. and Ph.D. level that provide excellent opportunities for graduate work in the general field of water resources. Well equipped laboratories coupled with a modern Department of Computer Science makes it possible to develop the latest techniques and training in research and teaching.

For further information contact Professor Helmer Holje, Director, Water Resources Research Center.

NEBRASKA

UNIVERSITY OF NEBRASKA

Lincoln, Nebraska 68503

The University of Nebraska offers a number of programs of graduate study in the general field of water resources. Areas of emphasis include soil-water relationships, irrigation engineering, hydrology, hydraulics, water resources engineering, sanitary engineering, and water resources economics. Supporting programs are available in various departments including geology, zoology, botany, sociology, political science, chemistry and microbiology.

For further information contact Dr. W. Veissman, Jr., Director of the Water Resources Research Institute.

NEVADA

UNIVERSITY OF NEVADA

Reno, Nevada 89507

Graduate work leading to the M.S. and Ph.D. in Hydrology is available under the University's Interdisciplinary Program in Hydrology and Hydrogeology. Additional degrees as noted are also offered through the individual colleges participating in the Interdisciplinary Program in the fields as noted. The Department of Geology (M.S. and Ph.D.) offers work in hydrogeology and environmental water quality and water geochemistry; the Department of Civil Engineering (M.S. and Ph.D.) in hydrology, hydraulics and water resources engineering; the Division of Agricultural Economics of the College of Agriculture (M.S.) in economics of agriculture and resources; the Division of Renewable Natural Resources of the College of Agriculture (M.S. and Ph.D.) in forest and range management; and the Division of Plant, Soil and Water Science of the College of Agriculture (M.S.) in hydrology for resource management and drainage and irrigation.

For further information, please contact Dr. George B. Maxey, Department of Geology, or Dr. John W. Malone, Jr., Division of Agricultural Economics, College of Agriculture.

NEW HAMPSHIRE

UNIVERSITY OF NEW HAMPSHIRE

Durham, New Hampshire 03824

Graduate studies are offered in water-resource related fields leading to the M.S. and Ph.D. degrees. Major areas for advanced studies and departments offering work are ecology, limnology, fresh-water biology, and estuaries (Biochemistry, Botany, Geology, Microbiology, Zoology); hydrology (Civil Engineering, Soil and Water Science); ground water (Geology, Soil and Water Science); soil and water chemistry (Chemistry, Soil and Water Science); resource development and watershed management (Resource Economics, Forest Resources). Major facilities include Computation Center, Estuarine Laboratory, and Engineering Experiment Station. Other cooperating groups include Water Resource Research Center, Agricultural Experiment Station, and Resource Development Center.

For additional information write the individual departments or the Chairman, Water Resource Research Center, James Hall or the Dean, Graduate School, Social Science Center.

NEW JERSEY

PRINCETON UNIVERSITY

Princeton, New Jersey 08540

Graduate study in the Water Resources Program may be pursued by enrollment in the Civil Engineering, Geological Engineering, or Geology Departments. A broad program is offered, emphasizing the sciences and engineering sciences. Advanced course work is available in the theory of ground water flow, hydraulics, open-channel flow, water resources, sanitary engineering, soil physics, geophysics, and related areas in geology such as geomorphology and sedimentology. Princeton University and Rutgers have established a cooperative agreement for the exchange of students at the graduate level, enabling additional graduate study in sanitary engineering, environmental sciences, soil and water conservation engineering, ecology, radiological health, and hydraulic structures.

For further information, contact Professor R. J. M. DeWiest, Department of Civil and Geological Engineering.

RUTGERS - THE STATE UNIVERSITY

New Brunswick, New Jersey 08903

Advanced work in water resources at Rutgers has been largely oriented towards the general areas of water supply, pollution and waste disposal. Graduate students in these and allied fields are mainly in environmental sciences; civil, chemical and sanitary engineering; ecology; soil science; meteorology; geography; geology; economics and city and regional planning. In most departments the Ph.D. degree is offered. Laboratories are available in environmental science, hydraulics and sanitary engineering, chemical engineering, oyster research, radiation science, agricultural engineering, and various smaller research facilities. The Water Resources Research Institute for New Jersey is located at Rutgers, and a large number of research opportunities are available. Advanced students in water resources at Rutgers may also take courses at Princeton University, under a cooperative agreement, where desirable to round out a program.

For further information, contact Director William Whipple of the Research Institute, Professor Joel Kaplovsky of Environmental Sciences or Professor Marvin Granstrom of Civil Engineering.

NEW MEXICO

NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY

Socorro, New Mexico 87801

Graduate study at New Mexico Institute of Mining and Technology is administered by a Graduate Council representative of the graduate faculty. The graduate curriculum leads to the Master of Science degree in geophysics (hydrology option) and a Doctor of Philosophy degree in geoscience with research specialization in hydrology, ground water hydrology, and related problems in solid earth geophysics. Additional research specialization leading to the Master of Science degree in geology is offered in the area of water resource management and economics. These programs have the support of the combined laboratory and research facilities of all three divisions of the institution and the cooperation or actual participation of the respective staffs.

For further information contact Dr. Marvin H. Wilkening, Chairman, Graduate Council.

NEW MEXICO STATE UNIVERSITY

Las Cruces, New Mexico 88001

New Mexico State University offers several programs of graduate study in the general field of water resources. Advanced degrees are awarded to students with major emphasis in hydraulics, hydrology, sanitary engineering, water resources engineering, and the economic aspects of water resources. Minor areas of specialization include irrigation engineering, geology, geography and soil-water relationships.

For further information contact Dr. H. R. Stucky, Director of the Water Resources Research Institute or Professor Samuel P. Maggard, Head of the Department of Civil Engineering.

UNIVERSITY OF NEW MEXICO

Albuquerque, New Mexico 87106

Graduate studies in Water Resources and related fields are available in the Department of Civil Engineering leading to the M.S. and Ph.D. degrees. Specialty areas are available in Hydraulics, Hydrology, Sanitary Engineering, and Water Resources Economics. Interdisciplinary programs are developed in cooperation with the Departments of Biology, Geology, Geography, Economics, Government, Law, Chemistry, Physics, Mathematics, Nuclear Engineering and Chemical Engineering.

For further information contact Professor C. L. Hulbos, (Chairman, Civil Engineering) or Professor S. Cohen (Chairman, Economics).

NEW YORK

CORNELL UNIVERSITY

Ithaca, New York 14850

Graduate studies in water resources and resources related to water may be pursued at Cornell University in engineering, in the physical, biological and social sciences and in the humanities. Programs of study to meet individual requirements can be arranged in Civil Engineering (e.g. Hydrology, Hydraulic and Sanitary Engineering and Water Resources Systems; Geodetic and Photogrammetric Engineering); Industrial Engineering (e.g. Operations Research and Systems Analysis and Design; Applied Statistics and Probability); Chemical and Agricultural Engineering; Geology and Geography; Agronomy; Agricultural Economics;

Conservation (e.g. Fishery Biology, Forest and Natural Resources Conservation; Oceonography and Wildlife Management); International Agricultural Development; City and Regional Planning; Business and Public Administration; Government; and Economics. Graduate interdisciplinary programs in the physical, biological and economic bases of water resource development; water law; systems analysis; and comprehensive multipurpose river basin development complement the numerous programs of study.

For information write to Professor Charles D. Gates, Water Resources Field Representative or Professor Leonard B. Dworsky, Director, Water Resources Center, Hollister Hall.

STATE UNIVERSITY OF NEW YORK - 65 campuses

Graduate work in various aspects of water resources is offered at several different units of the State University of New York. Leadership and direction for water resources programming on a University-wide basis has been mandated to the State University Water Resources Center although the Center itself now has no instructional responsibilities. Within the State University of New York [SUNY], the following is a partial listing of schools offering graduate work in water resources or related fields.

Albany	Atmospheric Science
Binghamton	Geohydrology
Buffalo	Biology, Water Resources Engineering
Stony Brook	Marine Science
SUNY Agriculture at Cornell University	Agricultural Engineering, Conservation
SUNY Forestry at Syracuse University	Watershed Management, Interdisciplinary Water Resources

Additionally, several of the State University Colleges offer work at the graduate level in biology, geography, geology, ecology, lake studies, or meteorology. Laboratories, field installations, computing facilities, and cooperative arrangements are available at several SUNY units.

For further information, contact the specific SUNY University or College, or Mr. R. D. Hennigan, Director, State University Water Resources Center, SUNY College of Forestry, Syracuse University, Syracuse, New York 13210.

NORTH CAROLINA

THE UNIVERSITY OF NORTH CAROLINA

North Carolina State University, Raleigh, North Carolina 27607
University of North Carolina at Chapel Hill, North Carolina 27514

The University of North Carolina offers an intercampus Graduate Minor in Water Resources and the following individual campus programs:

At Raleigh graduate studies are offered in hydraulics, hydrology, water supply and pollution control in Civil Engineering; industrial waste control by the Departments of Civil Engineering, Textile Chemistry, Wood and Paper Science, and Food Science; in watershed, soil and water management by the Departments of Biological and Agricultural Engineering, Crop Science, Forestry, and Soil Science; and in fresh water, estuarine and marine biology and ecology by the Departments of Botany and Zoology. Specialized training opportunities by the Departments of Economics, Geosciences and Microbiology, Landscape Architecture, Politics, and Recreation Resources Administration.

At Chapel Hill graduate studies in the Departments of Environmental Sciences and Engineering, City and Regional Planning, Political Science, Botany, Geology, Zoology and the Institute of Marine Science. An interdisciplinary graduate program by the Departments of City and Regional Planning and Environmental Sciences and Engineering in systems analysis, economics of public investment, water resources planning and development, natural resources law and administration, public administration, regional planning and development, environmental planning, advanced hydrology, and integrated water quality management.

For additional information, write Professor David H. Howells, Director, Water Resources Research Institute, Consolidated University of North Carolina, 124 Riddick Building, N. C. State University.

OHIO

OHIO STATE UNIVERSITY

Columbus, Ohio 43210

The Department of Civil Engineering features graduate studies in hydrology and hydraulics and in sanitary engineering with special emphasis in water chemistry, and biological treatment of wastes. The Department of Geology offers a graduate program

with special emphasis on hydrogeological studies. The Department of Agricultural Engineering offers graduate hydrological training with particular emphasis on surface and subsurface drainage systems relating to agricultural lands and analytical techniques relating to small watershed hydrology. An interdisciplinary training program sponsored by the Federal Water Pollution Control Administration, and administered through The Ohio State University School of Natural Resources promotes interdisciplinary training in water pollution control among the various disciplines such as Civil Engineering, Chemistry, Biochemistry, Agronomy, Agricultural Engineering, Geology, Zoology, and Botany. Interdisciplinary studies are also encouraged through the departments of Geography, Sociology, and Economics.

For further information contact Professor V. T. Ricca, Department of Civil Engineering, or Professor G. O. Schwab, Department of Agricultural Engineering.

OKLAHOMA

UNIVERSITY OF OKLAHOMA

Norman, Oklahoma 73069

The University of Oklahoma offers M. S. and Ph.D. degrees in the area of Water Resources through the College of Engineering and a variety of M. S. and Ph.D. programs in such water related areas as geology, environmental health, economics, law, geography, and biology. The degree programs are tailored to the particular students requirements from water resources courses, covering,for example, irrigation, channel mechanics and river engineering, sanitary engineering hydrology, water quality management and water resources systems analyses and related offerings in Econometrics', Conservation, Administration, Planning, Statistics, Meteorology, and Law.

For detailed information, contact Professor George W. Reid, School of Civil Engineering and Water Resources.

OREGON

OREGON STATE UNIVERSITY

Corvallis, Oregon 97331

An interdisciplinary minor in Water Resources at the M.S. or Ph.D. level can be taken under the guidance of the Water Resources Research Institute in conjunction with major studies in the student's specialty area. Over twenty departments of the University participate in this

program, including; Agricultural Chemistry, Agricultural Economics, Agricultural Engineering, Atmospheric Sciences, Botany, Business Administration, Chemical Engineering, Chemistry, Civil Engineering, Electrical and Electronic Engineering, Entomology, Fisheries and Wildlife, Forest Management, Geography, Horticulture, Mathematics, Mechanical and Industrial Engineering, Microbiology, Oceanography, Soils, and Statistics. The interdisciplinary minor permits specialization in such areas as Hydrology, Water Quality, or Water Resources Planning and Management. It is designed to broaden the student's background and education in areas related to his major field of study. A seminar series is offered each term by the Water Resources Research Institute covering various facets of water resources planning and development and associated problems.

For further information, contact Director, Water Resources Research Institute, 115 Covell Hall.

PENNSYLVANIA

DREXEL INSTITUTE OF TECHNOLOGY

Philadelphia, Pennsylvania 19104

Graduate studies in water resources at Drexel are carried on under either the Civil Engineering Department or the Environmental Engineering and Science graduate program, leading towards M.S. and Ph.D. degrees. These programs encompass multidisciplinary aspects of control of the various problem areas in the human environment. Pertinent courses are offered under the several sub-areas of water resources: management, hydraulic engineering, sanitary engineering, and water resources science. Course presentations in the management area include water resources economics, planning, systems analysis, statistical analysis, sociology, and political science. In the hydraulic and sanitary engineering areas, courses are offered in hydraulics and fluid mechanics, hydrology, water resources systems engineering, water quality control, stream analysis and pollution control, and industrial wastes treatment. Water resources science covers closely-related subjects in the physical and biological sciences, particularly in the basic areas of hydrogeology and aquatic biology, chemistry, and ecology. A wide range of elective subjects are presented in other related fields of science and in other aspects of the environment, such as air resources, land resources, solid waste systems, human resources, occupational health, transportation, and public administration. Active research covers a number of problem aspects of water resources, using well-equipped Drexel laboratory facilities.

For further information contact Dr. P. W. Purdom, Director, Center for the Study of the Environment, or Dr. W. B. Strandberg, Associate Professor of Civil Engineering.

PENNSYLVANIA STATE UNIVERSITY

University Park, Pennsylvania 16802

Advanced degree programs emphasizing hydrology and water resources are available in the Departments of Agronomy, Agricultural Engineering, Civil Engineering, Forestry, Geology, Meteorology and Zoology. Courses are available in climatology, forest hydrology, fisheries management, geomorphology, hydrology, hydrometeorology, hydrogeology, limnology, land economics, meteorology, open channel hydraulics, soil conservation, soil physics, soil and water engineering, waste treatment and water pollution control. Interdisciplinary studies are also offered in the Institute for Research on Land and Water Resources and with the Departments of Agricultural Economics, Political Science and Geography.

For further information, contact Professor J. C. Frey, Institute for Research on Land and Water Resources, or Professor W. E. Sopper, School of Forestry.

SOUTH CAROLINA

CLEMSON UNIVERSITY

Clemson, South Carolina 29631

Graduate study at the M.S. or Ph.D. level in water resources is available within a variety of programs, interdisciplinary or departmental in nature. Major emphasis may be placed on one or more of the following: hydrology, fluid mechanics, soil and water conservation, irrigation, ground water, water quality, water resources management, sanitary engineering, resource economics, economic development, aquatic biology, hydrogeology, and soil-plant-water relationships. Special advantages of Clemson University include: ownership of 21,000 acres of land adjacent to the campus; an uninhabited watershed for hydrology and conservation studies; location adjacent to Hartwell Lake; ownership of water and waste treatment plants; substantial industrialization within the area; and a location in a high rainfall area with topography of the state varying from mountains to coastal plains.

For further information, write to Dean L. G. Rich, College of Engineering; Dean W. H. Wiley, College of Agriculture and Biological Sciences; or Dr. A. W. Snell, Chairman of the Directorate, Water Resources Research Institute.

TEXAS

TEXAS A & M UNIVERSITY

College Station, Texas 77843

Graduate programs which emphasize various aspects of water resources development, management and utilization may be developed in several departments of the university. Currently students are pursuing graduate degrees in soil and crop sciences, economics, biology, chemistry, physics, engineering, geology, oceanography, meteorology, recreation, wildlife science and statistics, with programs arranged to satisfy their interests in water resources. There is a continuing expansion of faculty and facilities to meet the needs of these students and to provide for the research demanded by agencies and firms involved in development and management of water supplies and in pollution control. The Sea Grant program has provided new opportunities recently for an expanded teaching and research effort in water resources. New laboratories and equipment are being developed on the main campus and at Galveston, for the purpose of study of the marine resources of the Gulf and associated bays and estuaries.

For information about graduate courses, seminars, institutes and research, contact the Water Resources Institute.

TEXAS TECHNOLOGICAL COLLEGE

Lubbock, Texas 79409

The several aspects of water resources in "drier" climates are treated in an interdisciplinary program of study in hydraulics, hydrology, mathematics, statistics, and economics. Opportunities for graduate study in the scientific and technological aspects of water resources at the M.S. and Ph.D. levels are available in the Department of Civil Engineering and Geosciencies. The specialized programs in hydrology and sanitary engineering are centered in the Department of Civil Engineering and offer research opportunities in river hydraulics and surface and groundwater hydrology. Course work and research leading to the M.S. degree in Agricultural Economics emphasizes the economics of water conservation and the allocation and use of exhaustible groundwater for obtaining maximum economic benefits under alternative economic conditions and in view of various private and public income goals.

For further information contact Dr. Dan M. Wells, Director,Water Resources Center.

UNIVERSITY OF TEXAS

at Austin, Texas 78712

Strong programs with major emphasis on water resources are offered in the departments of Civil Engineering and Geology including degree programs in Environmental Health Engineering and Atmospheric Sciences. Cooperative programs with the Institute of Marine Sciences are also available. Other departments offer specialized work in areas important to water resource problems. Formal courses, seminar courses, and research are offered in areas including surface water and groundwater hydrology, water quality management, engineering works for water resources development, atmospheric science, water biology, and water chemistry. Opportunities are available for study in social sciences with special consideration of their relation to water resources problems. These areas of study include law, government, economics, business administration, geography, and sociology. Fellowships, traineeships, and assistantships are available for highly qualified students.

For further information, contact Professor Earnest F. Gloyna, Director, Center for Research in Water Resources, or Professor Walter L. Moore, Department of Civil Engineering.

UTAH

UTAH STATE UNIVERSITY

Logan, Utah 84321

Graduate studies (M.S. and Ph.D.) are available in three colleges: (1) Agriculture, (2) Engineering, and (3) Forest, Range and Wildlife Management. The programs emphasize water quality management, economics of optimum allocation of water among competing uses, feasibility of water development, appraisal and role of legal, social and political institutions, water resources engineering, hydrology, regional planning, system analysis, watershed management, ecology, retention and flow of water in soils and plants, evapotranspiration and energy balance, irrigation uses, irrigation return flow and water resource development in developing countries.

Excellent research and experimental facilities are available in the Utah Water Research Laboratory, Ecology Research Center and the Agricultural Experiment Station.

For further information contact Dean D. F. Peterson, College of Engineering, Dean Vearl Smith, College of Agriculture or J. Whitney Floyd, College of Natural Resources.

VIRGINIA

VIRGINIA POLYTECHNIC INSTITUTE

Blacksburg, Virginia 24061

All specialties in water science are represented in the graduate offerings, permitting concentration in the areas of the student's interest. The M.S. and Ph.D. degrees are offered in all departments that have programs related to water resources. Particular emphasis in water-resource oriented studies is found in the Department of Civil Engineering through programs in hydrology, hydraulics and sanitary engineering. The Department of Geological Sciences offers extensive study in the interaction of geology and hydrology, with additional course work in planning related to water-resource management. Strong supporting programs can be found in fluid mechanics, statistics, biology and planning.

For further information contact Professor J. M. Wiggert, Department of Civil Engineering, or Professor B. N. Cooper, Department of Geological Sciences. For admission application write to the Graduate School.

WASHINGTON

UNIVERSITY OF WASHINGTON

Seattle, Washington 98105

The College of Forest Resources and Departments of Civil Engineering and Geology offer interdependent programs for M.S. and Ph.D. degrees with emphasis in hydrology. Civil Engineering students may pursue work in either quantitative or qualitative hydrology. Hydrogeology may be studied in the Department of Geology. The College of Forest Resources emphasizes soils, plants, evapotranspiration and watershed management. Supporting courses are available in climatology and oceanography. Studies in water resources are offered in the Departments of Economics and Geography and the School of Law. The Graduate School of Public Affairs sponsors a continuing seminar on public policy issues relating to natural resources.

For information contact Associate Dean S. P. Gessel, College of Forest Resources, Professor J. A. Crutchfield, Department of Economics, or Professor T. H. Campbell, Department of Civil Engineering.

WASHINGTON STATE UNIVERSITY

Pullman, Washington 99163

The formation of the State of Washington Water Research Center, in collaboration with the University of Washington, has done much to enhance graduate study in Water Resources. The College of Engineering offers a Ph.D. in engineering sciences as well as the master's degree in several departments associated with hydrology and water resources. Departments and schools associated with the Water Research Center program at Washington State University include: Agricultural Engineering, Business Administration, Civil Engineering, Economics, Geology, Political Science, Soils, Zoology and the Computing Center. The State of Washington Water Research Center acts as coordinator and planner of integrated water resources research programs drawing on the facilities and personnel of existing departments. Numerous graduate students are supported on projects sponsored by the Center.

For further information contact Dr. Allen F. Agnew, Director, State of Washington Water Research Center; Dr. W. H. Gardner, Department of Agronomy; Dr. D. L. Bender, Department of Civil Engineering; or Professor Max C. Jensen, Department of Agricultural Engineering.

WISCONSIN

UNIVERSITY OF WISCONSIN

Madison, Wisconsin 53706

Graduate studies for both Ph.D. and M.S. degree work in various fields associated with Water Resources are available in Civil Engineering, Meteorology, Geology, Soil Science, Bacteriology, Agricultural Engineering, Agricultural Economics, Economics, Urban and Regional Planning, and the Law School for the study of broad water resources problems. In addition, a student may specialize in depth in each of these areas and still generalize in one or more additional areas as his time and interests permit. The Water Resources Management Program is now beginning its second five-year grant period. Financial support for the M.S. degree candidate is available through a Federal Water Pollution Control Administration grant (U.S. Department of the Interior). A Water Resources Center is organized and conducting interdisciplinary research as well as specialized research in the above areas.

For further information contact Professor A. T. Lenz, Department of Civil Engineering, Professor D. A. Stephenson, Chairman, Water Resources Management Program, or Professor G. A. Rohlich, Director, Water Resources Center.

WYOMING

UNIVERSITY OF WYOMING

Laramie, Wyoming 82070

The University of Wyoming offers an advanced degree program leading to a Master of Science degree in Water Resources. This interdepartmental graduate training program offers an opportunity for those persons with a desire to learn about the broad aspects of water resources to follow a course of graduate training not limited to his own specialty but to gain perspective in compatible fields as well. Advanced degree work in various disciplines related to water resources is also available. A program of comprehensive interdisciplinary research is now underway on the campus through the Wyoming Water Resources Research Institute.

For further information, contact Donald R. Lamb, Head, Department of Civil Engineering, P. O. Box 3295, University Station, or Paul A. Rechard, Director, Wyoming Water Resources Research Institute, P. O. Box 3038, University Station.